

curriculum vitae

Monica Maceira

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Earth and Environmental Sciences (EES-GEO)
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Current Position

2006-Present PostDoctoral Research Associate
Los Alamos National Laboratory
Group EES-GEO: geophysics, seismology

Educational Background

- 2006 **Ph.D. in Geophysics** – The Pennsylvania State University (PA, U.S.A)
Advisor: Dr. Charles J. Ammon
Dissertation title: “Surface Waves, Earth Structure, and Seismic Discrimination”
GPA: 3.75
- 2000 **M.S. degree in Geophysics** – Saint Louis University (MO, U.S.A)
Advisor: Dr. Charles J. Ammon and Dr. Robert Herrmann
Dissertation title: “Faulting Parameters of the September 25, 1998 Pymatuning, Pennsylvania Earthquake”
GPA: 3.75
- 1996-1997 **Graduate courses in the program “Geodesia, Geofísica, y Meteorología”** - University Complutense, Madrid (Spain)
- Methods for the determination of focal mechanism of earthquakes
 - Microseismic data processing analysis. Application to civil engineering
 - Paleomagnetism and tectonics
 - Identification and characterization techniques of materials
 - Structure of the lithosphere and its appearance on the surface
 - Cyclicity of the sedimentary register
 - Seismic focal mechanism
 - Earth magnetic field reversals, magnetostratigraphy, and geochronological applications of paleomagnetism
- 1996 **Bachelor’s degree in Physics – Earth and Cosmos Sciences** – University Complutense, Madrid (Spain)
GPA: 3.4

Awards and Scholarships

2006 Seismological Society of America Student Paper Award.

2005	Los Alamos National Laboratory Spot Award in recognition of her efforts that reflect a sincere commitment to supporting the objectives of the Earth and Environmental Sciences Division's Student Program.
2004	Los Alamos National Laboratory Spot Award in recognition of the exceptional work in meeting the deliverable of project KB 6.1.
2003	P.D. Krynine Memorial Fund awardee.
2003	Teaching Assistantship at The Pennsylvania State University.
2001	Graduate Research Assistantship at The Pennsylvania State University.
2001	Graduate Research Assistantship at Saint Louis University.
2001	Certificate of Achievement in Research Excellence. Saint Louis University. Graduate Student Association. Seventh Annual Research Day Symposium.
1997-2000	Graduate Research Assistantship at Saint Louis University.
1996-1997	Graduate Research Assistantship at University Complutense, Madrid, Spain.

Employment Experience

2006-Present	PostDoctoral Research Associate, EES-GEO, Los Alamos National Laboratory.
2004-2006	GRA, EES-11, Los Alamos National Laboratory.
2002-2003	GRA, EES-11, Los Alamos National Laboratory.
2001	GRA (summer), EES-11, Los Alamos National Laboratory.
2000	Post Master Staff, EES-3, Los Alamos National Laboratory.

Teaching Experience

2003	Teaching assistant: Course Geosc001 – Physical Geology, College of Earth and Mineral Sciences, The Pennsylvania State University. I was in charge of designing, teaching, and grading the laboratory exercises and field trips. Laboratory exercises included topics such as Plate Boundaries, Minerals, Rocks, Earthquakes, Geologic Maps and Structures, Geologic Time, Petroleum Exploration and Environmental Geology.
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Academic and Professional Interests

Earthquake seismology: modeling moderate-size earthquakes as well as larger and more complicated ones; estimation of faulting geometry; spatio-temporal rupture processes

Inverse modeling

Seismic tomography

Surface-wave studies to estimate the Earth structure

Tectonics

Seismic discrimination (Nuclear Explosion Monitoring)

Gravity field

Publications

Peer Reviewed

M. Maceira, and C.J. Ammon, “Joint Inversion of Surface Wave Velocity and Gravity Observations and its Application to Central Asian Basins Shear Velocity Structure”, submitted to *J. Geophys. Research*, 2007.

M. Maceira, S.R. Taylor, C.J. Ammon, X. Yang, and A.A. Velasco, “High Resolution Rayleigh Wave Slowness Tomography of Central Asia”, *J. Geophys. Research.*, Vol. 110, No. B6, B06304, doi:10.1029/2004JB003429, 2005.

M. Maceira, C.J. Ammon, and R.B. Herrmann, “Faulting Parameters of the September 25, 1998 Pymatuning, Pennsylvania Earthquake”, *Seismological Research Letters*, V71, No 6, 742-752, 2000.

Not Peer Reviewed

L. Steck, H. Hartse, **M. Maceira**, J. MacCarthy, C. Rowe, S. Phillips, K. Mackey, K. Fuyita, M. Begnaud, and D. Baker, “Pn Tomography, Geophysical Models, Cross Correlation, and Location in Eurasia”, in *Proceedings of the 28th Seismic Research Review: Ground-Based Nuclear Explosion Monitoring Technologies*, 02-18, 510-5190, 2006.

G. Randall, X. Yang, H. Hartse, **M. Maceira**, M. Arrowsmith, and S.R. Taylor, “Regional Event Identification Research in Asia”, in *Proceedings of the 28th Seismic Research Review: Ground-Based Nuclear Explosion Monitoring Technologies*, 03-12, 654-664, 2006.

S.R. Taylor, H.J. Patton, **M. Maceira**, and X. Yang, “Regional Event Identification Research in Eastern Asia”, in *Proceedings of the 27th Seismic Research Review: Ground-Based Nuclear Explosion Monitoring Technologies*, Vol. I, 673-682, 2005.

X. Yang, S.R. Taylor, **M. Maceira**, H.J. Patton, J.T. Rutledge, G.E. Randall, and M.D. Renwald, “Regional Event Identification Research in Eastern Asia”, in *Proceedings of the 26th Seismic Research Review – Trends in Nuclear Explosion Monitoring*, 531-540, 2004.

S.R. Taylor, X. Yang, W.S. Phillips, H.J. Patton, **M. Maceira**, H.E. Hartse, and G.E. Randall, “Regional Event Identification Research in Eastern Asia”, in *Proceedings of the 25th Seismic Research Review – Nuclear Explosion Monitoring: Building the Knowledge Base*, 476-485, 2003.

X. Yang, S.R. Taylor, H.J. Patton, **M. Maceira**, and A.A. Velasco, “Evaluation of intermediate-period (10 to 30-sec) Rayleigh-wave group-velocity maps for central Asia”, in *Proceedings of the 24th Seismic Research Review – Nuclear Explosion Monitoring: Innovation and Integration*, Vol. I, 609-617, 2002.

M. Maceira, “Preliminary Results of Short Period Surface Wave Tomography in Central Asia”, internal publication *Los Alamos National Laboratory*, LA-UR-02-7052, 2002.

S.R. Taylor, A.A. Velasco, X. Yang, **M. Maceira**, and W.S. Phillips, “Bayesian Tomography Applied to Seismic Event Identification Problems”, in *Proceedings of the 23rd Seismic Research Review: Worldwide Monitoring of Nuclear Explosions*, 440-447, 2001.

Presentations

Seismological Society of America (SSA) Annual Meeting, Waikaloa, Hawaii (USA), April 2007. **Poster** Title: *Three-Dimensional Shear-Velocity Model for the Asian Continent From Surface-Wave Dispersion, Receiver Functions, and Gravity Observations*.

American Geophysical Union (AGU) Fall2006 Meeting, San Francisco, California (USA), December 2006. **Invited Talk** Title: *3D Velocity-Density Variations Beneath Central Asia From Surface-Wave Dispersion and Gravity Observations*

Seismological Society of America (SSA) Annual Meeting, San Francisco, California (USA), April 2006. **Poster** Title: *Joint Inversion of Surface Wave Velocity and Gravity Observations and its Application to Central Asian Basins Shear Velocity Structure*.

Seismological Society of America (SSA) Annual Meeting, Incline Village, Nevada (USA), April 2005. **Poster** Title: *Shear Velocity Structure of Asian Basins From Surface Wave Velocity Inversions*.

Solid Earth Physics Laboratory, Tohoku University, Sendai, Japan, March 2005. **Invited Talk** Title: *High Resolution Rayleigh Wave Slowness Tomography of Central Asia*.

American Geophysical Union (AGU) Fall2003 Meeting, San Francisco, California (USA), December 2003. **Poster** Title: *Bayesian Approach to Short Period Slowness Tomography in Central Asia*.

Seismological Society of America (SSA) Annual Meeting, San Juan, Puerto Rico (USA), May 2003. **Poster** Title: *Short-Period Surface-Wave Tomography in Central Asia and its Application to Seismic Discrimination*.

American Geophysical Union (AGU) Fall2002 Meeting, San Francisco, California (USA), December 2002. **Poster** Title: *Surface Wave Tomography in Central Asia*.

American Geophysical Union (AGU) Fall2000 Meeting, San Francisco, California (USA), December 2000. **Poster** Title: *Broadband Rupture Processes of the 1999 Izmit ($M_w = 7.4$) and the 1999 Düzce ($M_w = 7.2$) Turkey Earthquakes*.

Asamblea Hispano-Portuguesa de Geodesia y Geofísica. IX Asamblea Nacional de Geodesia y Geofísica, Spain, April 1998. **Poster** Title: *Paleomagnetic Study in the Central Part of the Alentejo-Plasencia Dike*.

Seismological Society of America (SSA) Annual Meeting, Boulder, Colorado (USA), March 1998. **Poster** Title: *High Frequency Ground Motion Scaling From Regional Array Data in Central Italy and Germany*.

Scientific Projects

- 2004-Present Ground-Based Nuclear Explosion Monitoring (GNEM) team member.
- 2006-2007 PI, DOE/NNSA/NA-22 ADTR RD Project: *Joint Inversion of Surface Waves, Body Waves, and Satellite Gravity Observations: Application to Asia 3D Velocity Structure.*

Professional Affiliations

- Member of AGU (American Geophysical Union, USA)
- Member of SSA (Seismological Society of America, USA)

Computer Proficiency

- Programming languages: C, Fortran77
- Operating systems: Unix, Windows, MacOS
- Scientific software: SAC, GMT, MATLAB, SQL
- Applications: GNU tools, LaTeX, Microsoft applications (Excel, Word, PowerPoint)
- Seismological data request tools: BREQ_FAST, autoDRM, WEED